

REMARKS/ARGUMENTS

Claims 1-17 stand rejected in the outstanding Official Action. Claims 1-7, 9-11 and 13-17 have been amended and therefore claims 1-17 remain in this application.

The Examiner's indication of acceptance of the drawings filed September 25, 2001 is appreciated. Additionally, the Examiner's acknowledgment of the claim for priority and receipt of the certified copies of the priority documents is appreciated. Finally, the Examiner's consideration of references submitted in the Information Disclosure Statement is appreciated.

The Patent Office objects to the Abstract, the arrangement of the specification and the Draftsman object to the drawings. It is also appreciated that the Examiner has brought the Abstract, the arrangement of the specification and the existence of Form PTO-948 to the applicant's attention. It is noted that the objection to the Abstract, the arrangement and this form appear to be an indication that the originally filed specification and drawings (transmitted from WIPO) do not meet the formality requirements of the U.S. Patent and Trademark Office. The Patent Office is reminded that the U.S. Patent and Trademark Office must comply with all articles of the Patent Cooperation Treaty (PCT) including Article 27. It has been held that:

"if the rule and interpretation of the PTO conflicts with the PCT, it runs afoul of Article 27 of the PCT which provides in part:

- (1) No national law shall require compliance with requirements relating to the form or contents of the international application different from or additional to those which are provided for in this Treaty and the Regulations."
Caterpillar Tractor v. Commissioner, 231 USPQ 590, 591 (EDVA 1986).

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The Patent Office has referenced this decision in the Official Gazette dated September 9, 1986 (1070 TMOG 5).

As a consequence, the Patent Office (including the Chief Draftsman's Office) may not require Abstract changes, specification format changes and/or drawing corrections (including changes in paper size, margins, etc.) as long as the originally submitted documents comply with the PCT requirements. Inasmuch as this specification and these drawings were forwarded for WIPO, by definition, they meet the PCT requirements (they are not forwarded until they meet PCT requirements.). Therefore, the objection to the Abstract, the specification and the Notice of Draftsman's Patent Drawing Review is respectfully traversed and reconsideration thereof is respectfully requested.

Notwithstanding the above, applicant has included a retyped Abstract on a separate sheet, and has added headings and subheadings to the specification. Corrected formal drawings will be submitted upon receipt of a Notice of Allowance.

Claims 1-17 stand rejected under 35 USC §112 (first paragraph) as being non-enabling. To the extent the Examiner's rejection is understood, he appears to believe that the specification does not contain an enabling disclosure with respect to the operation and interrelationship of the optical correlator and the processor. The Examiner's attention is directed to the discussion between the last line on page 10 through line 3 of page 12. In this discussion and specifically on page 11, lines 6-8, applicant's specification states that "the operation of optical correlators is well known and accordingly their operation will

not be discussed in detail." As is discussed on page 11, beginning at line 10 of applicant's specification, the processor 28 has stored images representative of the distinguishable markings, i.e., in the discussed embodiment a circle (18a), a cross (18b), a diamond (18c), etc.

The correlator 26 optically correlates each frame captured by the video camera 12 with an image representative of each of the possible markings. The correlation is accomplished by the use of spatial light modulators 32 and 34 which optically encode the video signals onto a coherent collimated laser beam operated by laser diode 52 and beam expander 54. The coherent optical images are Fourier transformed and since they are coherent with each other, they constructively interfere when they are the same, resulting in a set of correlation peaks which are in the form of spots of light whose location indicates where the two images are the same and whose intensity is indicative of how similar the images are. The set of correlation peaks is detected by CCD camera 56 once they have been reversed transformed by the Fourier lenses.

The output of camera 56 is used by the process to indicate when one of the markings passes through the field of view of the camera and thus indicates which marking generator produced the detected marking. Because the relative position of the markings is known, the pointing angle of the camera can be determined based upon "seeing" one or more of the markings.

A particularly inventive aspect of applicant's combination of elements is the use of an optical correlator to provide information regarding the existence of the specific

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distinguishable markings. This can be done extremely quickly and therefore provides highly accurate head tracking which is particularly advantageous in the cockpit of a modern jet fighter aircraft. Applicant's specification provides more than sufficient detail for one of ordinary skill in this art, i.e., the art of optical sensors, the art of optical correlation and the art of determining a user's head orientation based upon pointing information.

The questions posed in section 4 of the Official Action are clearly answered (so as to teach one of ordinary skill in the art) in the specification between pages 10 and 12, and it is noted that a preferred correlator in one embodiment is identified as the Vander Lugt correlator. Thus, the Examiner's suggestion that the optical correlator is not shown is believed incorrect. Additionally, the Examiner suggests that reference numeral 10 in Figure 1 has not been disclosed. Actually, this is disclosed on page 9, line 2 as being a "quick release connector arrangement 10 fixed inside the cockpit" as is shown in Figure 1.

In accordance with the above, one of ordinary skill in the art, given applicant's specification, would be clearly enabled to practice the currently claimed invention.

Claims 1-4, 10-12, 15 and 17 stand rejected under 35 USC §102 as anticipated by Hirota (U.S. Patent 6,064,749). The Examiner states that Hirota teaches "an optical correlator (42) for optically correlating the optical image from the optical sensor (22) with an optical image representative of at least one of the markings" and cites column 11, lines 30-50 as support for this conclusion. Each of applicants' independent claims

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specifies an optical correlator for optically correlating the optical image from the optical sensor with an optical image representative of at least one of the stored distinguishable markings. Hirota simply does not have any structure for conducting any optical correlation. Even read as broadly as possible, the portion in Hirota at column 11, lines 30-50 suggest only that the "image analyzer 42" looks for areas of specific color and then attempts to locate a colored dot for its position determination. As disclosed in applicant's specification, this is not optical image correlation as required by applicants' independent claims. As a result, Hirota clearly fails to teach the claimed invention and any further rejection based upon Hirota is respectfully traversed.

Claims 5-7 stand rejected under 35 USC §103 as being unpatentable over Hirota in view of Teitel (U.S. patent 5,812,257). Inasmuch as claims 5-7 ultimately depend from claim 1, the above comments with respect to claim 1 distinguishing over the Hirota reference are herein incorporated by reference.

It is noted that Teitel contains no disclosure of any optical correlation and therefore does not add to the Hirota reference in terms of teaching this critical feature missing in all prior art related to head tracking systems. Should the Examiner believe Hirota or Teitel teach an optical correlator for optically correlating the optical images from the optical sensor and the stored optical images, he is respectfully requested to point out that portion of either Hirota and/or Teitel which contains such teaching. Absent such teaching, even if the Hirota and Teitel references were combined, they still would fail to

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teach the subject matter of applicant's independent claims and therefore claims dependent thereon.

Claim 16 stands rejected under 35 USC §103 as unpatentable over Hirota as previously applied to claim 15 in view of Symosek (presumably U.S. Patent 5,424,556). The above comments with respect to the rejection of claim 15 over the Hirota reference are herein incorporated by reference.

Again, there is no indication or allegation by the Examiner that Symosek teaches the missing optical image correlator set forth in each of applicant's independent claims and incorporated by reference in claim 16. Accordingly, if no cited reference teaches a structure recited in applicant's claim, it is impossible to establish a *prima facie* case of obviousness over that combination of references.

It is noted that the Examiner has provided no prior art rejection of claims 8, 9, 13 and 14 and therefore presumably these claims are admitted to contain patentable subject matter over the Hirota/Teitel/Symosek references. Confirmation of the allowability of claims 8, 9, 13 and 14 is respectfully requested.

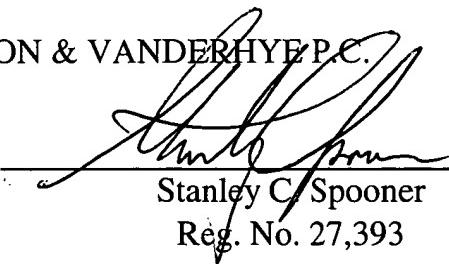
Having responded to all objections and rejections set forth in the outstanding Official Action, it is submitted that claims 1-17 are in condition for allowance and notice to that effect is respectfully solicited. In the event the Examiner is of the opinion that a brief telephone or personal interview will facilitate allowance of one or more of the above claims, he is respectfully requested to contact applicant's undersigned representative.

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Respectfully submitted,

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